

Characteristic of Effective Instruction

Teaching for Understanding

Purpose

The purpose of this brief is to describe teaching for understanding as a characteristic of effective instruction within the Iowa Core. The objective of teaching for understanding is to ensure that all students develop deep conceptual and procedural knowledge around the essential concepts and skills sets found in the Iowa Core.

Definition

Teaching for understanding is leading students to engage in a variety of thought-provoking activities such as explaining, finding evidence and examples, generalizing, applying, making analogies, and representing the topic in new ways. Grant Wiggins (1998) states, “Understanding is not just about coverage of knowledge... but about ‘uncoverage’—being introduced to new ideas and being asked to think more deeply and more carefully about facts, ideas, experiences, and theories previously encountered and learned.” Teachers who teach for understanding facilitate 1) the construction of deep conceptual and procedural knowledge, 2) the development of representations and conceptual models, 3) the induction of students into the discipline, and 4) the application of new learnings and understandings in new and novel situations (transfer) (Wiggins, 1998).

Teaching for understanding is a characteristic of effective instruction and an essential component of the Iowa Core. According to Wiske (1998), it shifts instruction from a paradigm of memorizing and practicing to one of understanding and applying. It is through teaching for understanding that students develop the ability to think and act flexibly with their deep conceptual and procedural knowledge. It is best accomplished through addressing classroom practices and supporting teachers as the primary change agent. Teaching for understanding is not a prescriptive or linear process.

Critical Attributes of Teaching for Understanding

Teaching for understanding includes the following attributes:

- **Instruction facilitates the construction of deep conceptual and procedural knowledge.**

The instruction provided asks students to actively engage in essential concepts and skills, make connections between prior knowledge and new learnings, and build their own deep understandings.

- **Instruction facilitates the development of representations and conceptual models.**

During instruction, students are asked to develop extensive mental frameworks or schemas to organize facts, concepts, processes, and procedures that demonstrate the interrelatedness of the essential concepts and skills. This supports their ability to retrieve and apply knowledge rapidly. Evidence that a learner has developed a mental framework or schema includes: explaining, reasoning, analyzing, interpreting, relating, comparing, making analogies, abstracting, conjecturing, and generalizing.

- **Instruction inducts students into the discipline.**

The instruction that students experience focuses on the essential concepts and how they function together in the discipline. During instruction, students are asked to use the vocabulary and engage the processes and tools that professionals in that field use.

- **Instruction facilitates the application of new learnings and understandings in new and novel situations (transfer).**

During instruction, teaching for transfer occurs when students are asked to apply what has been learned in novel and unconventional ways to address situations or problems that they have not previously encountered.

Additional Important Aspects of Teaching for Understanding

- **Making learning a long-termed, thinking-centered process (Rigorous and Relevant Curriculum)**

In teaching for understanding, teaching is less about what the teacher does, and more about how the teacher engages students in thinking and demonstrating understanding. Teachers must arrange the environment so that students can think about ideas they are learning for an extended period of time and use the knowledge. According to Pellegrino (2006), “[The] key to expertise is a deep understanding of subject matter that transforms factual information into ‘usable knowledge.’” This performance view focuses on the ways in which students use what they know to demonstrate their understanding and operate in the world. In other words, we know that students understand when they can carry out a variety of “performances” concerning a topic, such as explaining, interpreting, analyzing, relating, comparing, and making analogies (Perkins, 1993; Wiske, 1998).

- **Provide for rich ongoing assessment (Assessment for Learning)**

In a teaching for understanding context, assessment serves to both evaluate and enhance learning. Assessments are associated with essential concepts and skill sets and are used to provide feedback to students. They gauge progress and inform planning by both looking forward to inform next steps and looking backward to monitor and evaluate progress (Wiske, 1998). Effective ongoing assessment:

- is a **planned** process
- is used by both teachers and students

- takes place **during** instruction
 - provides assessment-based feedback to both teachers and students
 - helps teachers and students make adjustments that will improve student achievement
- **Pay heed to developmental factors (Teaching for Learner Differences)**

“Teachers who teach for understanding consider the complexity of the concepts they are teaching in light of the various stages of their learners’ cognitive development. According to child psychologist Lev Vyogotsky, there are highly complex dynamic relations between developmental and learning processes” (1978, p. 91). Furthermore, “a well known and empirically established fact is that learning should be matched in some manner with the child’s developmental level” (Vyogotsky, 1978, p. 84). Instruction carefully matched to student need can help students develop deep conceptual and procedural knowledge.

Planning

The planning stage of instruction is critically important in teaching for understanding.

Teacher Actions:

- Articulate what it means to engage authentically in a discipline. This includes examining the concepts, methods, and modes of thinking in a discipline and connecting it to the subject matter content.
- Examine the curriculum (in Iowa this means examining the essential concepts and skill sets in the Iowa Core), their own priorities, beliefs, and understandings of the subject matter.
- Determine what is central to the domain or discipline and accessible to students through a range of entry points. Consider the cultural points of view, prior knowledge, and personal interests of the students.
- Design tasks that “ramp up” to increasingly sophisticated performances of understanding and gradually allow for greater student autonomy.
- Design tasks so that over time students ultimately become responsible for their own learning.

Instructing

Instruction is designed to ensure that students reach understanding around concepts and skill sets of the Iowa Core.

Teacher Actions:

- Engage students in conversations about the meaning of the learning goals.
- Communicate continuously with students about the overarching goals of their classroom experiences.
- Build on students' initial explorations by assigning problems or projects that direct students toward central issues, questions, and understandings.
- Focus students' attention and support their performances through structured assignments and ongoing assessments that are often conducted in small groups.
- Engage students actively in the process of setting standards.
- Provide students with a great deal of choice and responsibility in selecting project topics and designing their inquiries.
- Exhibit openness to alternative paths to the learning goals.
- Engage students in rich instructional tasks and provide guidance and support as they develop their own solutions and strategies.
- Promote discourse among students to share their solution strategies and justify their reasoning.
- Summarize targeted concepts and skills and highlight effective representations and strategies.
- Extend students' thinking by challenging them to apply their knowledge in new situations, especially in real-world situations.
- Scaffold instructional tasks so that responsibility for learning is gradually released to students.

Student Actions:

- Perceive connections between the topic and their own interests and prior knowledge.
- Learn from one another's examples and comments when they work together.
- Engage in work that becomes increasingly complex, open-ended, and self-directed.
- Extend their thinking by applying their knowledge in new situations.
- Gradually take on more responsibility for their learning and become less dependent on the teacher.
- Engage in coherent conversations that rely on higher order thinking to promote collective understanding around essential concepts and skill sets.
- Use the language that professionals in the field use
- Engage processes that professionals use in the field.

Monitoring and Assessment

Assessments are embedded in instruction to inform teaching, as well as monitor and evaluate student progress.

Teacher Actions:

- Articulate learner progressions to reach learning targets.
- Provide students with clear targets for learning.
- Provide students with models of both high and low quality work.
- Provide descriptive feedback to help student progress toward learning targets.
- Engage students in self and peer assessments to develop metacognitive thinking and understanding of effective learning tactics.
- Create a classroom climate of collaboration and establish the learning process as a partnership between teachers and students.

Student Actions:

- Use descriptive feedback to monitor their own learning and make adjustments to learning tactics.
- Engage in ongoing reflection on the learning process through journals, log books, small group or whole class discussions, and other activities.

Sources:

- Active Learning Practice for Schools (ALPS); Teaching for Understanding: Putting Understanding up Front. <http://learnweb.harvard.edu/ALPS/tfu/index.cfm>
- Blythe, T. (1998). *The teaching for understanding guide*. San Francisco: Jossey-Bass.
- Bransford, J. D., Brown, A. L., & Cocking, R. R. (Eds.) (1999). *How people learn: Brain, mind, experience, and school*. Washington, DC: National Academy Press.
- Gardner, H., & Boix-Mansilla, V. (1994). Teaching for understanding in the disciplines and beyond. *Teachers College Record*, 96(2), 200–217.
- Graffam, B. (2003). Constructivism and understanding: Implementing the teaching for understanding framework. *Journal of Secondary Gifted Education*, 15(1), 13–22.
- Grouws, D. A., & Cebulla, K. J. (2000). *Improving student achievement in mathematics*. Geneva, Switzerland: International Academy of Education.
- Hiebert, J. (2003). What research says about the NCTM standards. In J. Kilpatrick, W. G. Martin, & D. Schifter (Eds.), *A Research Companion to Principles and Standards for School Mathematics*. Reston, VA: National Council of Teachers of Mathematics.
- Madsen, A. L., & Lanier, P. (1995). Does conceptually oriented instruction enhance computational competence? *Focus on Learning Problems in Mathematics*, 17(4), 42–64.
- National Council of Teachers of Mathematics (NCTM). (2000). *Principles and standards for school mathematics*. Reston, VA: Author.

- Newmann, F. M., King, M. B., & Carmichael, D.L. (2007). *Authentic instruction and assessment: Common standards for rigor and relevance in teaching academic subjects*. Des Moines, IA: Iowa Department of Education.
- Pellegrino, J. W. (2006). *Curriculum, instruction, assessment*. Commissioned paper for the New Commission on the Skills of the American Workforce.
- Perkins, D. (1993). Teaching for understanding. *American Educator: The Professional Journal of the American Federation of Teachers*, 17(3), 8, 28–35.
- Sherman, T., & Kurshan, B. (2004). Teaching for understanding. *Learning & Leading with Technology*, 32(4), 6–11.
- Vygotsky, L. (1978). Interaction between learning and development. In M. Cole (Trans.), *Mind in Society* (pp. 79–91). Cambridge, MA: Harvard University Press.
- Wallace, J., & Louden, W. (2003). What we don't understand about teaching for understanding: Questions from science education. *Journal of Curriculum Studies*, 35(5), 545–566.
- Wiggins, G. (1998). *Educative assessment: Designing assessments to inform and improve student performance*. San Francisco: Jossey-Bass.
- Wiske, M. S. (Ed.). (1998). *Teaching for understanding: Linking research with practice*. San Francisco: Jossey-Bass.